WHAT IS CLAIMED IS:

1. An evaluation support apparatus using CAD (Computer aided design) data for evaluation of a recyclability of products each configured by a plurality of parts and environmental load thereof, the apparatus comprising:

a memory which stores parts basic data containing kinds of materials forming the parts and masses or densities of the materials;

a part data generator which generates, for each of the parts, parts/material data from the CAD data referring to the parts basic data of the memory, the parts/material data including parts names, kinds of materials forming the parts, masses of the materials; and

an estimation unit configured to estimate the recyclability of each of the products and the environmental load thereof based on the parts/material data.

2. A design support apparatus which supports a design of a product, the apparatus comprising:

a data generator which generates parts/material data including parts composing the product, kinds of materials composing the parts and mass of each of the materials that differ in kind;

a setting unit configured to set an evaluation condition;

an evaluation unit configured to evaluate a recyclability of the product, using the evaluation condition and the parts/material data;

an analysis unit configured to analyze a factor obstructing the recyclability based on an evaluation result of the evaluating unit; and

an output unit configured to output a remedy for an obstruction factor provided as an analysis result of the analysis unit.

3. The apparatus according to claim 2, which includes an update unit configured to update, based on the remedy outputted, the evaluation condition and the parts/material data which are used in the evaluation by the evaluation unit, and wherein the evaluation unit is configured to evaluate a recyclability of the product based on the updated evaluation condition and the updated parts/material data, and the output unit is configured to output an updated evaluation result of the evaluation unit.

4. The design support apparatus according to claim 3, which further comprises a conversion unit configured to convert the parts/material data used in the evaluation by the evaluation unit to CAD (computer aided design) data including a name of parts composing the product and a quantity or the number of the parts.

5. The design aid apparatus according to claim 2, wherein the output unit comprises a display unit

configured to display at least one part and material having high recyclability than the parts and the materials and used as a substitute for the parts and the materials corresponding to the obstruction factor.

6. The design aid apparatus according to claim 2, wherein the output unit comprises a display unit configured to display a demountable portion of the parts and materials corresponding to the obstruction factor as a recyclability remedy.

7. A design support apparatus which supports a design of a product, comprising:

a data generator which generates parts/material data including parts composing a product, kinds of materials composing the parts and mass of each of the materials that differ in kind;

a setting unit configured to set an evaluation condition;

a first evaluation unit configured to evaluate an environmental load occurring in a recycling of the product, using the parts/material data and the evaluation condition;

an analysis unit configured to analyze an aggravation factor of the environmental load based on an evaluation result of the evaluation unit;

a first display unit configured to display a remedy for the aggravation factor according to an analysis result of the analysis unit;

an update unit configured to update the evaluation condition and the parts/material data used in the evaluation by the evaluation unit, using the remedy displayed on the first display unit;

a second evaluation unit configured to evaluate the environment load based on updated evaluation condition and parts/material data obtained by the update unit;

a second display unit configured to display an evaluation result of the second evaluation unit; and

a conversion unit configured to convert the parts/material data used in evaluation by the second evaluation unit to CAD data including names of the parts composing the product, a quantity of the parts or the number of the parts.

8. The design aid apparatus according to claim 7, wherein the first display unit displays part/material having a lower environmental load than the part/materials and used as a substitute for the part/material corresponding to the obstruction factor as a recyclability remedy.

9. The design aid apparatus according to claim 7, wherein the first display unit displays a demountable portion of the part/material corresponding to the aggravation factor of the environmental load as the remedy.

10. A design support apparatus which supports

a design of a product, comprising:

a data generator which generates parts/material data including parts composing a product, kinds of materials composing the parts and mass of each of the materials that differ in kind;

a setting unit configured to set an evaluation condition;

a first evaluation unit configured to evaluate a recyclablity of the product and an environmental load occurring in a recycling of the product, using the evaluation condition and the parts/material data;

an analysis unit configured to analyze an obstruction factor of the recyclability and an aggravation factor of the environmental load based on an evaluation result of the evaluation unit;

a first display unit configured to display a remedy for the obstruction factor and the aggravation factor according to an analysis result of the analysis unit;

an update unit configured to update the evaluation condition and the parts/material data used in the evaluation by the evaluation unit, based on the remedy displayed on the first display unit;

a second evaluating unit configured to evaluate the recyclability of the product and the environment load, using updated evaluation condition and parts/material data which are obtained by the update unit;

a second displaying unit configured to display an evaluation result of the second evaluating unit; and

a conversion unit configured to convert the parts/material data used in evaluation by the second evaluation unit to CAD data including names of parts composing the product, a quantity of the parts or the number of the parts.

11. A method for supporting a design of a product comprising:

evaluating a recyclability of the product based on parts/material data including parts composing a product, kinds of materials composing the parts and mass of each of the materials that differ in kind;

analyzing an obstruction factor of the recyclability of the product based on an evaluation result of the recyclability; and

displaying a remedy for the obstruction factor according to an analysis result.

12. The method according to claim 11, which includes updating evaluation condition and the parts/material data used in the evaluation according to the remedy displayed, and displaying the evaluation result of the recyclability based on updated evaluation condition and parts/material data.

13. The method according to claim 11, which includes converting the updated parts/material data to CAD data including names of parts composing the

product, a quantity of the parts and the number of the parts.

14. The method according to claim 11, which includes displaying part/material having a high recyclability than the part/materials and used as a substitute for the part/materials corresponding to the obstruction factor as a recyclability remedy.

15. The method according to claim 11, which includes displaying a demountable portion of the part/material corresponding to the obstruction factor as a recyclability remedy.

16. A program used for evaluating a recyclability of a product and stored in a computer readable medium, the program comprising:

means for instructing a computer to evaluate a recyclablity of the product, based on parts/material data including parts composing a product, a kind of materials composing the parts and mass of each of the materials that differ in kind and obtain a first evaluation result;

means for instructing the computer to analyze an obstruction factor of the recyclability based on the first evaluation result;

means for instructing the computer to display a remedy for the obstruction factor according to an analysis result;

means for instructing the computer to update

evaluation condition and parts/material data used in the evaluation, according to the displayed remedy;

means for instructing the computer to evaluate the recyclability of the product, based on updated evaluation condition and parts/material data and obtain a second evaluation result;

means for instructing the computer to display the second evaluation result; and

means for instructing the computer to convert the parts/material data used for obtaining the second evaluation to CAD data including names of parts composing the product, a quantity of the parts or the number of the parts.

17. A recyclability evaluation program stored in a computer readable medium, the program includes:

means for instructing a computer to read a data set regarding a recycling object from a memory;

means for instructing the computer to vary in probability a quantity of collection of recycling objects based on the data set and according to the number of deterioration items; and

means for instructing the computer to compute a fluctuation distribution of recycling rates of all recycling objects using the quantity of collection of the recycling objects.

18. The program according to claim 17, wherein means for instructing the computer to compute the

fluctuation distribution includes means for instructing the computer to vary the quantity of collection of the recycling object for each of parts composing the recycling objects.

19. The program according to claim 17, wherein means for instructing the computer to compute the fluctuation distribution includes means for instructing the computer to vary the quantity of collection of the recycling objects for each of materials composing the recycling objects.

20. The program according to claim 17, which includes means for instructing the computer to compute a recycling rate capable of attaining at a given reliability.

21. The program according to claim 17, which includes means for instructing the computer to set a probability distribution regarding a variation of the quantity of collection of the recycling objects for each of the materials of the parts.

22. The program according to claim 17, which includes means for instructing the computer to determine a deterioration state for each of the parts set by a user according to a busy condition of the recycling object predicted based on the data set, and means for instructing the computer to determine a probability distribution regarding the quantity of collection of the recycling objects according to

a deterioration state of the part.

23. The program according to claim 17, which includes means for instructing the computer to compute a variation distribution of recycling rates of all recycling objects except a non-recycling object.

24. The program according to claim 17, which includes means for instructing the computer to vary in provability a quantity of collection of resin of a closed recycling object.

25. The program according to claim 17, which includes means for instructing the computer to adjust a probability distribution regarding the quantity of collection of the recycling objects, using recycling process result information regarding used recycling objects.

26. The program according to claim 17, which includes means for instructing the computer to vary, in provability, a recycling process cost for each of kinds of materials composing the recycling objects; and

include an order to make it compute change distribution of a recycling process cost of the whole said recycling object.

27. A recyclability evaluation method comprising:

varying, in probability, a recycling collection quantity of recycling objects according to the number of deterioration items;

computing a variation distribution of recycling

rates of all recycling objects using the recycling collection quantity; and

evaluating a recyclability based on the variation distribution of the recycling rates.

28. The method according to claim 27, wherein varying the recycling collection quantity includes varying a recycling collection quantity for each of parts composing the recycling objects according to the number of deterioration items.

29. The method according to claim 27, wherein varying the recycling collection quantity includes varying a recycling collection quantity for each of materials composing the recycling objects according to the number of deterioration items.

30. The program according to claim 27, which includes computing a recycling rate capable of attaining at a given reliability.

31. The program according to claim 27, which includes adjusting a probability distribution regarding the quantity of collection of the recycling objects, using recycling process result information regarding used recycling objects.

32. The program according to claim 27, which includes varying, in provability, a recycling process cost for each of kinds of materials composing the recycling objects; and computing a variation distribution of a recycling process cost of all

recycling objects.

33. An evaluation support apparatus for supporting a recyclability evaluation of a product including component parts, comprising:

a first database which stores data regarding a mixture admissibility every kind of materials;

an input unit configured to input data of a kind of component material and a mass thereof and an evaluation condition for each of the component parts of the product to be subjected to a recyclability evaluation;

a determination unit configured to determine a mixture admissibility of materials included in the component parts in units of a to-be-evaluated component part, using input data from the input unit and referring to the first database;

a selection unit configured to select a discarding/recycling process from a plurality of discard/recycling processes every to-be-evaluated component part on the basis of a mixture admissibility determination result of the determination unit, the discard/recycling processes being prepared beforehand and modeled;

a second database which stores information indicating a discarding/recycling process classification, a basic unit, and a collection yield;

a computation unit configured to compute

a recyclable mass and a recyclable rate with respect to the whole of the product by performing the following process, using the second database, the process including computing a recyclable mass corresponding to quantity of the parts to be evaluated which are applicable to the discard/recycling process selected and a recyclable rate with respect to the whole of the product, extracting a collection yield rate, and accumulating the recyclable mass and the recyclable rate every part to obtain an accumulated recyclable mass and an accumulated recyclable rate; and

a display unit configured to display at least one of results obtained by the computation unit and the selection unit.

34. An evaluation support method for supporting a recyclability evaluation of a product including component parts, comprising:

storing data regarding a mixture admissibility every kind of materials in a first database;

inputting data of a kind of component material and a mass thereof and an evaluation condition for each of the component parts of the product to be subjected to a recyclability evaluation;

determining a mixture admissibility of materials included in the component parts in units of a to-be-evaluated component part, using input data from the input unit and referring to the first database;

selecting a discarding/recycling process from a plurality of discard/recycling processes every to-be-evaluated component part on the basis of a mixture admissibility determination result of the determination unit, the discard/recycling processes being prepared beforehand and modeled;

storing information indicating a discarding/recycling process classification, a basic unit, and a collection yield, in a second database;

computing a recyclable mass and a recyclable rate with respect to the whole of the product by performing the following process, using the second database, the process including computing a recyclable mass corresponding to quantity of the parts to be evaluated which are applicable to the discard/recycling process selected and a recyclable rate with respect to the whole of the product, extracting a collection yield rate, and accumulating the recyclable mass and the recyclable rate every part to obtain an accumulated recyclable mass and an accumulated recyclable rate; and

displaying at least one of results obtained by the computing and the selecting.

35. An evaluation support program stored in a computer readable medium for supporting a recyclability evaluation of a product including component parts, the program comprising:

means for instructing a computer to store data

regarding a mixture admissibility every kind of materials in a first database;

means for instructing the computer to input data of a kind of component material and a mass thereof and an evaluation condition for each of the component parts of the product to be subjected to a recyclability evaluation;

means for instructing the computer to determine a mixture admissibility of materials included in the component parts in units of a to-be-evaluated component part, using input data from the input unit and referring to the first database;

means for instructing the computer to select a discarding/recycling process from a plurality of discard/recycling processes every to-be-evaluated component part on the basis of a mixture admissibility determination result of the determination unit, the discard/recycling processes being prepared beforehand and modeled;

means for instructing the computer to store information indicating a discarding/recycling process classification, a basic unit, and a collection yield, in a second database;

means for instructing the computer to compute a recyclable mass and a recyclable rate with respect to the whole of the product by performing the following process, using the second database, the process

including computing a recyclable mass corresponding to quantity of the parts to be evaluated which are applicable to the discard/recycling process selected and a recyclable rate with respect to the whole of the product, extracting a collection yield rate, and accumulating the recyclable mass and the recyclable rate every part to obtain an accumulated recyclable mass and an accumulated recyclable rate; and

means for instructing the computer to display at least one of results obtained by the computing and the selecting.

36. An evaluation support apparatus for supporting a recyclability evaluation of a product including component parts, comprising:

a first database which stores data regarding a mixture admissibility every kind of polymer based materials, the mixture admissibility being determined by at least one of impurities tolerance, removal easiness, compatibility, marketability with respect to the polymer based materials;

an input unit configured to input data of a kind of component material and a mass thereof and an evaluation condition for each of the component parts of the product to be subjected to a recyclability evaluation, the product based on the polymer based materials;

a determination unit configured to determine

a mixture admissibility of materials included in the component parts in units of a to-be-evaluated component part, using input data from the input unit and referring to the first database;

a display unit configured to display at least one of results obtained by the computation unit and the selection unit.

37. An evaluation support apparatus for a recyclability evaluation of a product including component parts, comprising:

a first database which stores data regarding a mixture admissibility every kind of metal materials, the mixture admissibility being determined by a difficulty evaluation of a mixture separation in a refinement process or an impurity removal with respect to the metal material;

an input unit configured to input data of a kind of component material and a mass thereof and an evaluation condition for each of the component parts of the product to be subjected to a recyclability evaluation, the product based on the metal material;

a determination unit configured to determine a mixture admissibility of materials included in the component parts in units of a to-be-evaluated component part, using input data from the input unit and referring to the first database;

a selection unit configured to select a

discard/recycling process from a plurality of discard/recycling processes every to-be-evaluated component part on the basis of a mixture admissibility determination result of the determination unit, the discard/recycling processes being prepared beforehand and modeled;

a second database which stores information indicating a discarding/recycling process classification, a basic unit, and a collection yield;

a computation unit configured to compute a recyclable mass and a recyclable rate with respect to the whole of the product by performing the following process, using the second database, the process including computing a recyclable mass corresponding to quantity of the parts to be evaluated which are applicable to the discard/recycling process selected and a recyclable rate with respect to the whole of the product, extracting a collection yield rate, and accumulating the recyclable mass and the recyclable rate every part to obtain an accumulated recyclable mass and an accumulated recyclable rate; and

a display unit configured to display at least one of results obtained by the computation unit and the selection unit.

38. An evaluation method for evaluating an environmental load in recyclability and life cycle of a product, comprising:

preparing a database having a plurality of discard process classification models and a distribution ratio set for each of the classification models; and

using a discard process and distribution ratio data provided by selecting a classification suitable for an object to be evaluated from the database when determining the discard process to evaluate the environmental load in the life cycle of the product.